Claim Amendments

1. (Previously presented) A seal for use adjacent to a rotating surface and a stationary surface and comprising:

a ring having a sealing surface for providing a metal-to-metal seal between at least a portion of said stationary surface and said sealing surface, said ring being spaced from said rotating surface and further having a race engagement surface thereon separate from said sealing surface;

a first race adapted for engagement with at least a portion of said rotating surface and rotation therewith;

a second race adapted for engagement with said race engagement surface; and

a plurality of bearing elements disposed between said first and second races.

2. (Original) The seal of claim 1 further comprising a bearing cage defining a plurality of bearing openings therein disposed between said first and second races, wherein said bearing elements are disposed in said bearing openings.

3. (Original) The seal of claim 1 wherein said sealing surface is an outer peripheral surface of said ring.

4. (Cancelled).

5. (Cancelled)

6. (Previously presented) The seal of claim 40 wherein said bearing elements are rollers.

7. (Cancelled).

8. (Cancelled).

9. (Previously presented) The seal of claim 35 wherein said grooves are substantially concentric.

10. (Previously presented) The seal of claim 35 wherein ends of said annular portions are spaced from bottom surfaces of said grooves.

11. (Previously presented) The seal of claim 35 wherein said race engagement surface of said ring is between said grooves.

12. (Original) The seal of claim 1 wherein said bearing elements are rollers.

13. (Cancelled).

14. (Previously presented) An apparatus comprising:

a stationary housing having a housing sealing surface therein;

a rotor rotatably disposed in said housing;

a ring having a ring sealing surface thereon for providing a metal-to-metal seal along at least a portion of said housing sealing surface, said ring being spaced from said rotor and further having a bearing race engagement surface thereon separate from said ring sealing surface;

a first bearing race adapted for engagement with at least a portion of said rotor and rotatable therewith;

a second bearing race adapted for engagement with said race engagement surface;

a bearing cage defining a plurality of bearing openings therein disposed between said first and second bearing races; and

a plurality of bearing elements disposed in said bearing openings.

15. (Original) The apparatus of claim 14 wherein:

said housing sealing surface is substantially cylindrical; and

said ring sealing surface is substantially concentric with said housing sealing surface.

16. (Original) The apparatus of claim 15 wherein said ring sealing surface is an outer peripheral surface of said ring.

17. (Cancelled)

18. (Cancelled)

19. (Previously presented) The apparatus of claim 42 wherein said bearing elements are rollers.

20. (Cancelled).

21. (Cancelled).

22. (Previously presented) The apparatus of claim 36 wherein:

said grooves have bottom surfaces which face one another; and

ends of said annular portions and said bottom surfaces of said grooves define a gap therebetween.

23. (Previously presented) The apparatus of claim 36 wherein said race engagement surface of said ring is between said grooves.

24. (Original) The apparatus of claim 14 wherein said bearing elements are rollers.

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Previously presented) The seal of claim 37 wherein said annular portions are substantially concentric.

33. (Previously presented) The seal of claim 37 wherein ends of said annular portions are sized to be spaced from bottom surfaces of said grooves.

34. (Cancelled)

35. (Previously presented) A seal for use adjacent to a rotating surface and a stationary surface and comprising:

a ring having a sealing surface for substantially sealing between at least a portion of said stationary surface and said sealing surface, said ring further having a race engagement surface thereon and defining a pair of annular grooves therein;

a first race adapted for engagement with at least a portion of said rotating surface and rotation therewith, said first race comprising a pair of annular portions, each of said portions extending into one of said grooves;

a second race adapted for engagement with said race engagement surface; and

a plurality of bearing elements disposed between said first and second races.

36. (Previously presented) An apparatus comprising:

a stationary housing having a housing sealing surface therein;

a rotor rotatably disposed in said housing;

a ring having a ring sealing surface thereon for substantially sealing along at least a portion of said housing sealing surface and further having a bearing race engagement surface thereon and defining a pair of substantially concentric annular grooves therein;

a first bearing race adapted for engagement with at least a portion of said rotor and rotatable therewith, said first bearing race comprising a pair of annular portions, each of said portions extending into one of said grooves;

a second bearing race adapted for engagement with said race engagement surface;

a bearing cage defining a plurality of bearing openings therein disposed between said first and second bearing races; and

a plurality of bearing elements disposed in said bearing openings.

37. (Previously presented) A seal for use adjacent to a rotating race engagement surface and a stationary race engagement surface, wherein one of said rotating race engagement surface and said stationary race engagement surface defines a pair of annular grooves therein, comprising:

a first race adapted for engagement with one of said rotating race engagement surface and said stationary race engagement surface, said first race defining outer and inner annular portions, each of said annular portions extending into one of said grooves;

a second race adapted for engagement with the other of said rotating race engagement surface and stationary race engagement surface, said second race being disposed between said annular portions of said first race; and

a plurality of bearing elements disposed between said first and second races.

38. (Previously presented) A seal for use adjacent to a rotating surface and a stationary surface and comprising:

a ring having a sealing surface for substantially sealing between at least a portion of said stationary surface and said sealing surface, said ring further having a race engagement surface thereon separate from said sealing surface;

a first race adapted for engagement with at least a portion of said rotating surface and rotation therewith, said first race defining a recess therein;

a second race adapted for engagement with said race engagement surface; and

a plurality of bearing elements disposed between said first and second races, wherein said second race and bearing elements are disposed in said recess.

39. (Previously presented) An apparatus comprising:

a stationary housing having a housing sealing surface therein;

a rotor rotatably disposed in said housing;

a ring having a ring sealing surface thereon for substantially sealing along at least a portion of said housing sealing surface and further having a bearing race engagement surface thereon separate from said ring sealing surface;

a first bearing race adapted for engagement with at least a portion of said rotor and rotatable therewith, said first bearing race defining a recess therein;

a second bearing race adapted for engagement with said race engagement surface;

a bearing cage defining a plurality of bearing openings therein disposed between said first and second bearing races; and

a plurality of bearing elements disposed in said bearing openings, wherein said second bearing race, bearing cage and bearing elements are disposed in said recess.

40. (Currently amended) A seal for use adjacent to a rotating surface and a stationary surface and comprising:

a ring having a sealing surface for substantially sealing between at least a portion of said stationary surface and said sealing surface, said ring being spaced from said rotating surface and further having a race engagement surface thereon separate from said sealing surface;

a first race adapted for engagement with at least a portion of said rotating surface and rotation therewith, said first race having a substantially planar first bearing surface thereon;

a second race adapted for engagement with said race engagement surface, said second race have a substantially planar second bearing surface thereon, said first and second bearing surfaces being substantially parallel; and

a plurality of bearing elements disposed between said first and second races and engaging said first and second bearing surfaces.

41. (Previously presented) A seal for use adjacent to a rotating surface and a stationary surface and comprising:

a ring having a sealing surface for substantially sealing between at least a portion of said stationary surface and said sealing surface, said ring being spaced from said rotating surface and further having a pair of race engagement surfaces thereon disposed on opposite sides of said ring and separate from said sealing surface;

a pair of first races adapted for engagement with different portions of said rotating surface on opposite sides of said ring and adapted for rotation therewith;

a pair of second races disposed on opposite sides of said ring and adapted for engagement with a corresponding one of said race engagement surfaces; and

a plurality of bearing elements disposed between corresponding ones of said first and second races.

42. (Currently amended) An apparatus comprising:

a stationary housing having a housing sealing surface therein;

a rotor rotatably disposed in said housing;

a ring having a ring sealing surface thereon for substantially sealing along at least a portion of said housing sealing surface, said ring being spaced from said rotor and further having a bearing race engagement surface thereon separate from said ring sealing surface;

a first bearing race adapted for engagement with at least a portion of said rotor and rotatable therewith, said first bearing race having a substantially planar first bearing surface thereon;

a second bearing race adapted for engagement with said race engagement surface, said second bearing race having a substantially planar second bearing surface thereon, said first and second bearing surfaces being substantially parallel;

a bearing cage defining a plurality of bearing openings therein disposed between said first and second bearing races; and

a plurality of bearing elements disposed in said bearing openings and engaging said first and second bearing surfaces.

43. (Previously presented) An apparatus comprising:

a stationary housing having a housing sealing surface therein;

a rotor rotatably disposed in said housing;

a ring having a ring sealing surface thereon for substantially sealing along at least a portion of said housing sealing surface, said ring being spaced from said rotor and further having a pair of bearing race engagement surfaces thereon on opposite sides of said ring and separate from said ring sealing surface;

a pair of first bearing races adapted for engagement with different portions of said rotor on opposite sides of said ring and rotatable with said rotor;

a pair of second bearing races disposed on opposite sides of said ring and adapted for engagement with a corresponding one of said race engagement surfaces;

a pair of bearing cages defining a plurality of bearing openings therein disposed between said corresponding ones of said first and second bearing races; and

a plurality of bearing elements disposed in said bearing openings of the bearing cages.

44. (Cancelled)